

Unit Planning Guide: Grade 6 Unit 4 of 8

Unit Title: Expressions and Equations	Pacing (Duration of Unit): 5 weeks
Grade: 6	Buffer Day(s):

Transfer Goals

Students will be able to independently use their learning to:

- Make sense of problems and persevere in solving them.
- **Reason abstractly and quantitatively.**
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Use appropriate tools strategically.
- Attend to precision.
- **Look for and make use of structure.**
- **Look for and express regularity in repeated reasoning.**

Established Goals (2011 MA Curriculum Frameworks Standards Incorporating the Common Core State Standards)

<p>Standards (Priority Standards in bold):</p> <p>6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.</p> <p>6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.</p> <p>6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p, q, and x are all nonnegative rational numbers.</p> <p>6.EE.8 Write an inequality of the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form $x > c$ or $x < c$ have infinitely many solutions; represent solutions of such inequalities on number line diagrams.</p> <p>6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation $d = 65t$ to represent the relationship between distance and time. finding the whole, given a part and the percent.</p>	<p>WIDA for English Language Learners</p> <p>Standard 1: ELLs communicate for Social and Instructional purposes within the school setting</p> <p>Standard 3: ELLs communicate information, ideas and concepts necessary for academic success in the content area of Mathematics</p> <p>In the lesson planning stage, teachers will need to differentiate lessons for ELLs. In order to accomplish this they will need: 1.) this curriculum map, 2.) a list of their ELLs and their proficiency levels, and 3.) appropriate language function expectations and scaffolds or supports.</p>
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<p>Big Ideas:</p> <ul style="list-style-type: none"> • The relationship between inverse operations isolates the variable to get the solution. • Words and symbols can be translated into numeric expressions • The dependent variable is the quantity that depends on other factors. It is the outcome variable. The independent variable is the quantity that stands alone and is not changed by other variables being measured. It is the input variable. The independent variable affects the dependent variable. • Independent and dependent variables can be represented by using tables, graphs, and/or algebraic equations/expressions. 	<p>Essential Questions:</p> <ul style="list-style-type: none"> • Why are variables used in math? • How do equations help us solve real world problems?
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Acquisition (*Mostly assessed through traditional summative assessments)

<p>Knowledge: Key basic concepts, facts, and key terms (written in phrases) students should be able to recall independently.</p> <p><i>Students will know ...</i></p> <p>That specific values make an equation and an inequality true.</p> <p>That substitution decides whether an equation or inequality is true.</p> <p>That two quantities have a relationship to one another that does not change.</p> <p>That a graph, table and an equation can all represent the same real-world problem.</p> <p>That an equation describes how the dependent variable changes in terms of the independent variable.</p>	<p>Skills: The discrete skills and process students should be able to use independently (<u>Bloom's Level of Learning should be noted in parentheses.</u>)</p> <p><i>Students will be skilled at:</i></p> <ul style="list-style-type: none"> • Writing an equation from a real world problem (synthesis) • Solving an equation or inequality (understanding) • Writing an equation using dependent and independent variables (synthesis) • Analyzing the relationship between the variables using graphs and tables and relate these to the equation (analysis) • Displaying inequalities on a number line (application) • Identifying dependent and independent variables (knowledge) • Representing both dependent and independent variables using tables, charts, and graphs (synthesis) • Translating words and symbols into algebraic expressions/equations (synthesis)
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<p>Vocabulary:</p> <p>coordinate plane</p> <p>coordinate system</p> <p>dependent variable</p> <p>expression</p> <p>independent variable</p> <p>linear equation</p> <p>Order of Operations</p> <p>origin</p> <p>x-axis</p> <p>x-coordinate</p> <p>y-axis</p> <p>y-coordinate</p>		<p>Knowledge Questions:</p> <ul style="list-style-type: none"> • How do we represent the unknown in a problem? • How to you isolate the variable using inverse operations in order to solve one-step equations? • What is an equation? • What is an inequality? • How do I solve an equation? • How do you use substitution in an equation or inequality?
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